Bell Ringer - Factoring Quiz

$x^2 + 18x + 77$

$12x^2 - 20x - 32$

$144x^2 - 168x + 49$

$640x^2 - 10$

$20x^2 + 13x + 2$

L7(6.3) - Vertex Form by Completing the Square

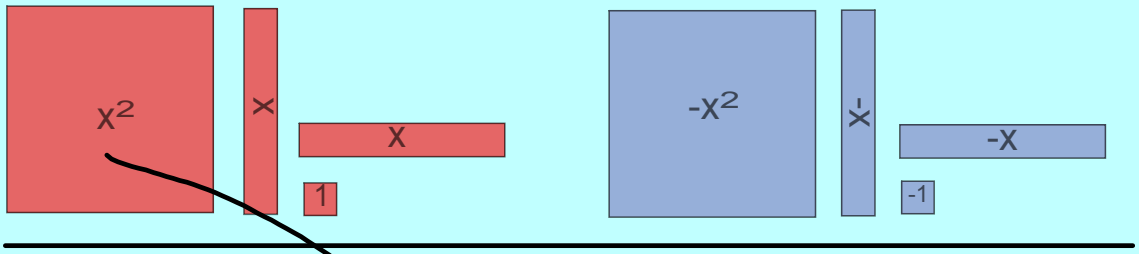
Recall:

Vertex form: $y = a(x - h)^2 + k$

Note that $(x - h)^2$ is a perfect square.

In general, for perfect square trinomials,

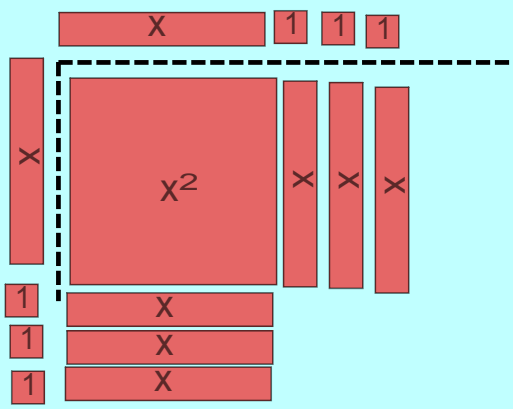
$$(a+b)^2 = a^2 + 2ab + b^2$$
$$(a-b)^2 = a^2 - 2ab + b^2$$

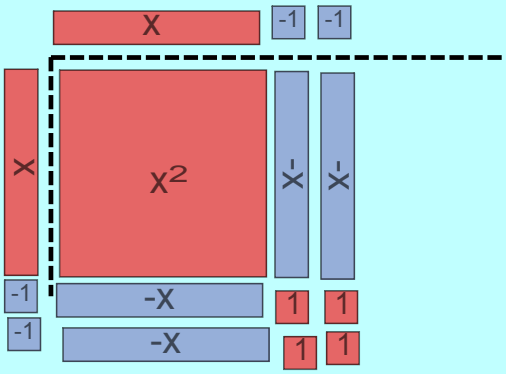


Identify the missing constant so that the trinomial is a perfect square trinomial, then factor it.

$x^2 + 6x + \underline{9} = (x+3)^2$

$x^2 - 4x + \underline{4} = (x-2)^2$





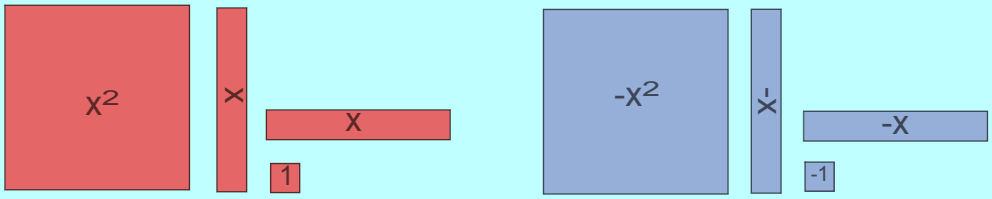
Ex.1 What is missing from these perfect squares?

(a) $x^2 + 10x + \underline{25} = (x+5)^2$

	x	5
x	x^2	5x
5	5x	25

(b) $x^2 - 18x + \underline{81} = (x-9)^2$

	x	-9
x	x^2	-9x
-9	-9x	81



Identify the missing constant so that the trinomial is a perfect square trinomial. You will have some tiles "left over".

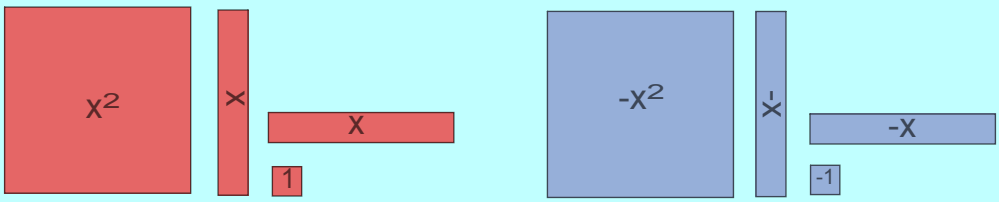
$x^2 + 6x + 3 = (x+3)^2 \underline{\quad -9+3 \quad}$

$x^2+6x+9-9+3$

0

1. $y = (x+3)^2 - 6$

Perfect Square



Identify the missing constant so that the trinomial is a perfect square trinomial. You will have some tiles "left over".

$x^2 - 4x - 3 = (\quad)^2$ _____

Steps:

1) Factor out 'a' from the first two terms.

2) Force a perfect square for the factored first two terms.

3) Collect the constants.

Ex.2 Complete the square for each of the following

a) $y = x^2 + 12x - 7$

$= x^2 + 12x + 36 - 36 - 7$

$= (x+6)^2 - 43$

b) $y = x^2 - 20x + 15$

$= x^2 - 20x + 100 - 100 + 15$

$= (x-10)^2 - 85$

c) $y = 3x^2 + 12x + 11$

extra step 1st:

$y = 3(x^2 + 4x) + 11$

$= 3[(x^2 + 4x + 4 - 4)] + 11$

$= 3[(x+2)^2 - 4] + 11$

$= 3(x+2)^2 - 12 + 11$

$= 3(x+2)^2 - 1$

d) $y = -x^2 + 6x + 13$

$= -1[x^2 - 6x] + 13$

$= -1[(x^2 - 6x + 9 - 9)] + 13$

$= -1[(x-3)^2 - 9] + 13$

$= -(x-3)^2 + 9 + 13$

$= -(x-3)^2 + 22$

Assigned Work:

p. 331 # 2ab, 3ab, 5ac, 7ab, 9, 11, 16